

***Installation Instructions for:
EMS P/N 30-6040
1992-1995 Civic / Del Sol / Integra
90-95 Accord / Prelude (2.1L Only)***

WARNING:



This installation is not for the tuning novice nor the PC illiterate! Use this system with **EXTREME** caution! The AEM EMS System allows for total flexibility in engine tuning. Misuse of this product can destroy your engine!

If you are not well versed in engine dynamics and the tuning of management systems or are not PC literate, please do not attempt the installation. Refer the installation to an AEM-trained tuning shop. A list of tuners can be found in the "AEM EMS Tuning" subsection of the AEM Electronics Forums at <http://www.aempower.com> or by calling 800-423-0046.

NOTE: AEM holds no responsibility for any engine damage that results from the misuse of this product!

This product is legal in California for racing vehicles only and should never be used on public highways.

ADVANCED ENGINE MANAGEMENT INC.
2205 126th Street Unit A Hawthorne, CA. 90250
Phone: (310) 484-2322 Fax: (310) 484-0152
[Http://www.aempower.com](http://www.aempower.com)
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Thank you for purchasing an AEM Engine Management System.

The AEM Engine Management System (EMS) is the result of extensive development on a wide variety of cars. Each system is engineered for the particular application. The AEM EMS differs from all others in several ways. The EMS is a stand alone system, which completely replaces the factory ECU and features unique Plug and Play Technology, which means that each system is configured especially for your make and model of car without any jumper harnesses. There is no need to modify your factory wiring harness and in most cases your car may be returned to stock in a matter of minutes.

For stock and slightly modified vehicles, the supplied startup calibrations are configured to work with OEM sensors, providing a solid starting point for beginner tuning. For more heavily modified cars, the EMS can be reconfigured to utilize aftermarket sensors and has many spare inputs and outputs allowing the elimination of add-on rev-limiters, boost controllers, nitrous controllers, fuel computers, etc. It also includes a configurable onboard 1MB data logger that can record any 16 EMS parameters at up to 250 samples per second. Every EMS comes with all functions installed and activated; there is no need to purchase options or upgrades to unlock the full potential of your unit.

The installation of the AEM EMS on the supported vehicles uses the stock sensors and actuators. After installing the AEMTuner software, the startup calibration will be saved to the following folder on your PC:

C:\Program Files\AEM\AEMTuner\Calibrations\Honda-Acura

Multiple calibrations may be supplied for each EMS; additional details of the test vehicle used to generate each calibration can be found in the Calibration Notes section for that file.

Please visit the AEM Performance Electronics Forum at <http://www.aempower.com> and register. We always post the most current strategy release, PC Software and startup calibrations online. On the forum, you can find and share many helpful hints/tips to make your EMS perform its best.

TUNING NOTES AND WARNING:

While the supplied startup calibration may be a good starting point and can save considerable time and money, it will not replace the need to tune the EMS for your specific application. AEM startup calibrations are not intended to be driven aggressively before tuning. We strongly recommend that every EMS be tuned by someone who is already familiar with the AEM software and has successfully tuned vehicles using an AEM EMS. Most people make mistakes as part of the learning process; be warned that using your vehicle as a learning platform can damage your engine, your vehicle, and your EMS.

Read and understand these instructions **BEFORE** attempting to install this product.

1) Install AEMTuner software onto your PC

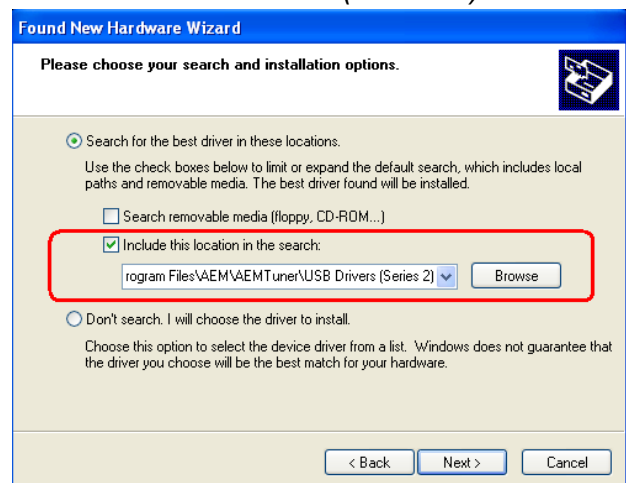
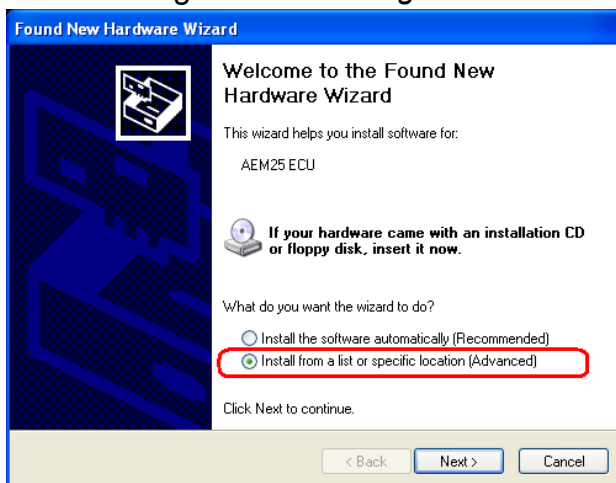
The latest version of the AEMTuner software can be downloaded from the AEMTuner section of the AEM Performance Electronics forums. Series 2 units are not supported by the older AEMPro tuning software.

2) Remove the Stock Engine Control Unit

- Access the stock Engine Control Unit (ECU). The location of the ECU on the OBD1 Hondas is behind the driver side kick panel.
- Carefully disconnect the wiring harness from the ECU. Avoid excessive stress or pulling on the wires, as this may damage the wiring harness. Some factory ECUs use a bolt to retain the factory connectors, and it must be removed before the harness can be disconnected. There may be more than one connector, and they must all be removed without damage to work properly with the AEM ECU. Do not cut any of the wires in the factory wiring harness to remove them.
- Remove the fasteners securing the ECU to the car body, and set them aside. Do not destroy or discard the factory ECU, as it can be reinstalled easily for street use and troubleshooting.

3) Install the AEM Engine Management System.

- Plug the factory wiring harness into the AEM EMS and position it so the wires are not pulled tight or stressed in any manner. Secure the EMS with the provided Velcro fasteners.
- Plug the comms cable into the EMS and into your PC.
- Turn the ignition on but do not attempt to start the engine.
- The USB drivers must be installed the first time you connect to a Series 2 EMS with an onboard USB port. When the Series 2 EMS is connected to the PC's USB port and receiving power from the vehicle, the "Found New Hardware" window will appear. Select "Install from a list of specific location (Advanced)" and browse to the following folder: *C:\Program Files\AEM\AEMTuner\USB Drivers (Series 2)*



- With the AEMTuner software open, select **ECU>>Upload Calibration** to upload the startup calibration file (.cal) that most closely matches the vehicle's configuration to be tuned. Check the Notes section of the calibration for more info about the vehicle it was configured for. These files can be found in the following folder:
C:\Program Files\AEM\AEMTuner\Calibrations\Honda-Acura

- f) Set the throttle range: Select Wizards>>Set Throttle Range and follow the on-screen instructions. When finished, check that the 'Throttle' channel never indicates less than 0.2% or greater than 99.8%, this is considered a sensor error and may cause some functions including idle feedback and acceleration fuel to operate incorrectly.

4) Ready to begin tuning the vehicle.

- a) Before starting the engine, verify that the fuel pump runs for a couple of seconds when the key is turned on and there is sufficient pressure at the fuel rail. If a MAP sensor is installed, check that the Engine Load indicates something near atmospheric pressure (approximately 101kPa or 0 PSI at sea level) with the key on and engine off. Press the throttle and verify that the 'Throttle' channel responds but the Engine Load channel continues to measure atmospheric pressure correctly.
- b) Start the engine and make whatever adjustments may be needed to sustain a safe and reasonably smooth idle. Verify the ignition timing: Select **Wizards>>Ignition Timing Sync** from the pull-down menu. Click the '*Lock Ignition Timing*' checkbox and set the timing to a safe and convenient value (for instance, 10 degrees BTDC). Use a timing light and compare the physical timing numbers to the timing value you selected. Use the *Sync Adjustment Increase/Decrease* buttons to make the physical reading match the timing number you selected.
- c) Note: This calibration needs to be properly tuned before driving the vehicle. It is intended for racing vehicles and may not operate smoothly at idle or part-throttle.
NEVER TUNE THE VEHICLE WHILE DRIVING

5) Troubleshooting an engine that will not start

- a) Double-check all the basics first... engines need air, fuel, compression, and a correctly-timed spark event. If any of these are lacking, we suggest checking simple things first. Depending on the symptoms, it may be best to inspect fuses, sufficient battery voltage, properly mated wiring connectors, spark using a timing light or by removing the spark plug, wiring continuity tests, measure ECU pinout voltages, replace recently-added or untested components with known-good spares. Check that all EMS sensor inputs measure realistic temperature and/or pressure values.
- b) If the EMS is not firing the coils or injectors at all, open the Start tab and look for the 'Stat Sync'd' channel to turn ON when cranking. This indicates that the EMS has detected the expected cam and crank signals; if Stat Sync'd does not turn on, monitor the Crank Tooth Period and T2PER channels which indicate the time between pulses on the Crank and T2 (Cam) signals. Both of these channels should respond when the engine is cranking, if either signal is not being detected or measuring an incorrect number of pulses per engine cycle the EMS will not fire the coils or injectors.
- c) If the Engine Load changes when the throttle is pressed this usually indicates that there is a problem with the MAP sensor wiring or software calibration; when the EMS detects that the MAP Volts are above or below the min/max limits it will run in a failsafe mode using the TPS-to-Load table to generate an artificial Engine Load signal using the Throttle input. This may allow the engine to sputter or start but not continue running properly.

Application Notes for EMS P/N 30-6040

Make:	Honda
Model:	Integra/Civic/Prelude/Accord
Years Covered:	1990-1995
Engine Displacement:	1.5L - 2.2L
Engine Configuration:	Inline 4
Firing Order:	1-3-4-2
N/A, S/C or T/C:	N/A
Load Sensor Type:	MAP
Map Min:	0.32V @ -13.9 PSI
Map Max:	4.84V @ 10.94 PSI
# Coils:	1
EMS Ignition driver type:	5-0V, Rising Edge trigger
# Injectors:	4
Factory Injectors:	190-240cc/min Saturated
Factory Inj Resistors:	No
Injection Mode:	Sequential
Knock Sensors used:	1
Lambda Sensors used:	1 (aftermarket wideband: factory O2 not supported)
Idle Motor Type:	Duty-controlled solenoid
Main Relay Control:	No
Crank Pickup Type:	Magnetic (2-wire)
Crank Teeth/Cycle:	24
Cam Pickup Type:	Magnetic (2-wire)
Cam Teeth/Cycle:	1
Transmissions Offered:	M/T, A/T
Trans Supported:	M/T Only
Drive Options:	FWD
Supplied Connectors:	Plug C with spare pins
Plug-N-Pin kit:	AEM part# 35-2611 (includes plugs A-D, pins)

Spare Injector Drivers:	Inj 5, Pin A8
Spare Injector Drivers:	Inj 6, Pin A6
Spare Injector Drivers:	Inj 7, Pin A16
Spare Injector Drivers:	Inj 8, Pin A14
Spare Injector Drivers:	Inj 9, Pin D4
Spare Injector Drivers:	Inj 10, Pin A11
Spare Coil Drivers:	Coil 2, Pin B6
Spare Coil Drivers:	Coil 3, Pin B3
Spare Coil Drivers:	Coil 4, Pin B4*
Boost Solenoid:	PW 2, Pin C10
EGT #1 Location:	Pin D5
EGT #2 Location:	Pin D2
EGT #3 Location:	Pin D9
EGT #4 Location:	Pin D10
Spare 0-5V Channels:	MAF, Pin D8
Spare 0-5V Channels:	ADCR11, Pin D12
Spare 0-5V Channels:	ADCR13, Pin B7
Spare 0-5V Channels:	ADCR14, Pin C9
Spare Low Side Driver:	Low Side 1, Pin C6
Spare Low Side Driver:	Low Side 2, Pin A10
Spare Low Side Driver:	Low Side 8, Pin A18
Spare Low Side Driver:	Low Side 9, Pin C4
Fuel Pump Relay control	Low Side 11, Pin A7
Check Engine Light:	Low Side 10, Pin A13
Spare High Side Driver:	High Side 2, Pin C11
Spare Switch Input:	Switch 1, Pin C7**
Spare Switch Input:	Switch 2, Pin C12**
Spare Switch Input:	Switch 5, Pin B8**
Spare Switch Input:	Switch 6, Pin C5**

WARNING: * If converting a calibration that was originally developed for a 30-1040 (Series 1) EMS, please note that the 30-6040 uses Coil 4 rather than Coil 5 on pin B4. All settings used for Coil 5 on the 30-1040 calibration will need to be adjusted for use with Coil 4 on the 30-6040. This will be especially important when used with coil-on-plug ignition conversions.

**All switch input pins must connect to ground, the switch should not provide 12V power to the EMS because that will not be detected as on or off. Connecting 12V power to the switch input pins may damage your EMS and void your warranty.

The function of the following pins have been changed from the original 30-1040 EMS, please see pinout chart for more info:
A22, B4, C2, D4

Solution for distributed ignition ‘kick back’ when cranking:

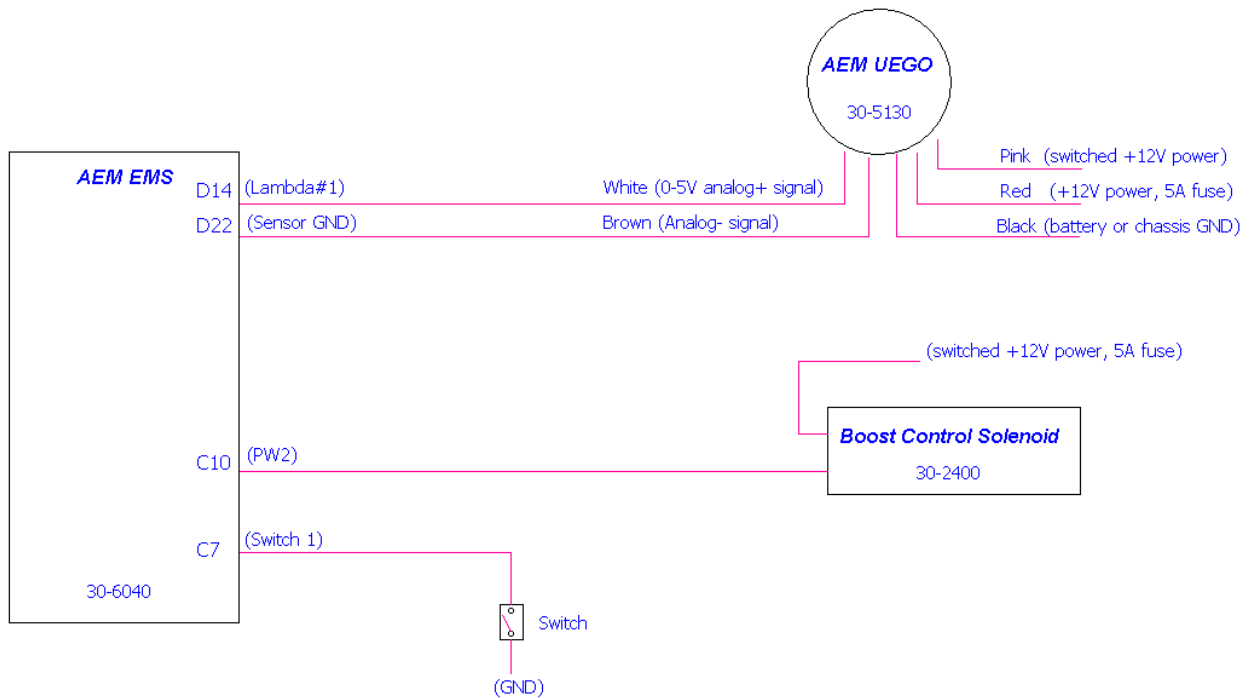
With the Series 1 EMS, some vehicles would experience erratic ignition timing at low RPM. The most noticeable symptom would be an engine that ‘kicks back’ when cranking, and in some cases the EMS would count timing errors or lose ‘Stat Sync’ at low engine speeds.

These problems have been eliminated by adjusting calibration settings in Series 2 Honda EMS startup calibrations, but could be re-introduced by converting Series 1 calibrations or copying values from Series 1 calibrations. If users wish to convert old Series 1 calibrations for use with the new Series 2 EMS, please ensure that the following options and tables match the Series 2 startup calibration:

Crank H Sens Below, Crank L Sens Above, Cam(T2) H Sens Below, Cam(T2) L Sens Above, Coil Dwell Factor, Dwell Max, Dwell Min, Dwell vs RPM (table), Dwell vs Batt Volts (table)

Wiring accessories to the EMS:

Please follow this suggested wiring diagram when adding accessories such as UEGO gauges, Boost Control solenoids, or switches for use with the EMS. Note that wire polarity is not important for the Boost Control Solenoid.



Connection Diagram for EMS P/N 30-6040

Pin #	OBD1 Honda / Acura	AEM EMS 30-6040	I/O	Availability
A1	Injector 1	Injector 1	Output	PnP for Injector 1
A2	Injector 4	Injector 4	Output	PnP for Injector 4
A3	Injector 2	Injector 2	Output	PnP for Injector 2
A4	VTEC Solenoid Valve	High Side Driver 1	Output	PnP for VTEC Solenoid
A5	Injector 3	Injector 3	Output	PnP for Injector 3
A6	Primary O2 Heater Control	Injector 6	Output	Avail, Injector Gnd, 1.5A max
A7	Fuel Pump Relay	Low Side Driver 11	Output	PnP for Fuel Pump Relay
A8	Fuel Pump Relay (Accord/Prelude Only)	Injector 5	Output	Avail, Injector Gnd, 1.5A max
A9	Idle Air Control Valve	PW 1	Output	PnP for Idle Air Control Valve
A10	---	Low Side Driver 2	Output	Avail, Switched Gnd, 1.5A max
A11	EGR Solenoid (Accord/Prelude Only)	Injector 10	Output	Avail, Injector Gnd, 1.5A max
A12	Radiator Fan Control (Except Prelude)	Low Side Driver 12	Output	PnP for Radiator Fan
A13	Malfunction Indicator Light	Low Side Driver 10	Output	Avail, Switched Gnd, 1.5A max
A14	---	Injector 8	Output	Avail, Injector Gnd, 1.5A max
A15	A/C Clutch Relay	Low Side Driver 6	Output	PnP for A/C Clutch Relay
A16	Alternator Control (Except Accord/Prelude)	Injector 7	Output	Avail, Injector Gnd, 1.5A max
A17	IAB Control Solenoid (Accord/Integra Only)	Idle #2	Output	Avail, Ground / +12V, 1.5A max
A18	---	Low Side Driver 8	Output	Avail, Switched Gnd, 1.5A max
A19	---	Idle #4	Output	Avail, Ground / +12V, 1.5A max
A20	EVAP Purge Control Solenoid	Low Side Driver 4	Output	Avail, Switched Gnd, 1.5A max
A21	Ignition Control Module	Coil 1	Output	PnP for Ignition Control Module (12/0V Rising edge)
A22	Ignition Control Module	CAN1L	---	Dedicated
A23	Power Ground 1	Power Ground	Both	Dedicated
A24	Power Ground 2	Power Ground	Both	Dedicated
A25	Power Source 1	+12V Switched	Both	Dedicated
A26	Logic Ground 1	Power Ground	Both	Dedicated

A1	A3	A5	A7	A9	A11	A13	A15	A17	A19	A21	A23	A25	B1	B3	B5	B7	B9	B11	B13	B15	C1	C3	C5	C7	C9	C11	D1	D3	D5	D7	D9	D11	D13	D15	D17	D19	D21
A2	A4	A6	A8	A10	A12	A14	A16	A18	A20	A22	A24	A26	B2	B4	B6	B8	B10	B12	B14	B16	C2	C4	C6	C8	C10	C12	D2	D4	D6	D8	D10	D12	D14	D16	D18	D20	D22

Connector A

Connector B Connector C

Connector D

Pin #	OBD1 Honda / Acura	AEM EMS 30-6040	I/O	Availability
B1	Power Source 2	+12V Switched	Both	Dedicated
B2	Logic Ground 2	Power Ground	Both	Dedicated
B3	---	Coil 3	Output	Avail, Rising Edge Trigger Coil Out
B4	---	Coil 4	Output	Avail, Rising Edge Trigger Coil Out
B5	A/C Switch Signal	Switch 3	Input	PnP for A/C Switch Signal
B6	---	Coil 2	Output	Avail, Rising Edge Trigger Coil Out
B7	---	ADCR13	Input	Avail, 0-5 Volt Input, 100k pull up
B8	Power Steering Pressure Switch	Switch 5	Output	Avail, Switched Input
B9	Starter Switch Signal	+12V When Cranking	Input	Dedicated
B10	Vehicle Speed Sensor	T3 (Vehicle Speed)	Input	PnP for Vehicle Speed Sensor
B11	CYP +	Cam Sensor	Input	Dedicated, PnP 1 pulse per cycle
B12	CYP -	Timing Ground	Output	Dedicated
B13	TDC +	T4 (Spare Speed)	Input	Avail, Magnetic Speed Sensor
B14	TDC -	Timing Ground	Output	Dedicated
B15	CKP +	Crank Sensor	Input	Dedicated, PnP 24 pulses per cycle
B16	CKP-	Timing Ground	Output	Dedicated

Pin #	OBD1 Honda / Acura	AEM EMS 30-6040	I/O	Availability
C1	---	+12V Switched	Input	Dedicated
C2	---	CAN1H	---	Dedicated
C3	---	Tach Output (LS7)	Output	Avail, Switched Gnd, 1.5A max
C4	---	Low Side Driver 9	Output	Avail, Switched Gnd, 1.5A max
C5	---	Switch 6	Input	Avail, Switched Input
C6	---	Low Side Driver 1	Output	Avail, Switched Gnd, 1.5A max
C7	---	Switch 1	Input	Avail, Switched Input
C8	---	IDLE #3	Output	Avail, Ground / +12V, 1.5A max
C9	---	ADCR14	Input	Avail, 0-5 Volt Input, 100k pull up
C10	---	PW 2	Output	Avail, Boost Control Solenoid
C11	---	High Side Driver 2	Output	Avail, +12V, 1.5A max
C12	---	Switch 2	Input	Avail, Switched Input

A1	A3	A5	A7	A9	A11	A13	A15	A17	A19	A21	A23	A25	B1	B3	B5	B7	B9	B11	B13	B15	C1	C3	C5	C7	C9	C11	D1	D3	D5	D7	D9	D11	D13	D15	D17	D19	D21
A2	A4	A6	A8	A10	A12	A14	A16	A18	A20	A22	A24	A26	B2	B4	B6	B8	B10	B12	B14	B16	C2	C4	C6	C8	C10	C12	D2	D4	D6	D8	D10	D12	D14	D16	D18	D20	D22

Connector A

Connector B Connector C

Connector D

Pin #	OBD1 Honda / Acura	AEM EMS 30-6040	I/O	Availability
D1	Voltage Back Up	Permanent +12V	Input	Dedicated
D2	Brake Switch (Except Prelude)	EGT 2	Input	Avail, jumper set for 0-5V Input
D3	Knock 1	Knock 1	Input	Dedicated
D4	Service Check Connector	Injector 9	Input	Avail, Injector Gnd, 1.5A max
D5	---	EGT 1	Input	Avail, jumper set for 0-5V Input
D6	VTEC Pressure Switch	Switch 4	Input	Avail, Switched Input
D7	Data Link Connector	High Side Driver 1	Output	Avail, same as pin A4
D8	---	MAF	Input	Avail, 0-5 Volt Input, 100k pull up
D9	Alternator FR Signal	EGT 3	Input	Avail, jumper set for 0-5V Input
D10	Electronic Load Detector	EGT 4	Input	Avail, jumper set for 0-5V Input
D11	Throttle Position Sensor	TPS	Input	Dedicated
D12	EGR Valve Lift Sensor (Accord/Prelude Only)	ADCR11	Input	Avail, 0-5 Volt Input, 100k pull up
D13	Engine Coolant Sensor	Coolant	Input	Dedicated, 2.2k pull up
D14	Primary O2 Sensor	Lambda 1	Input	Available, 0-5V Lambda 1 input
D15	Inlet Air Temp Sensor	AIT	Input	Dedicated, 2.2k pull up
D16	Secondary O2 Sensor	Lambda 2	Input	Available, 0-5V Lambda 2 input
D17	Map Sensor	MAP	Input	Dedicated
D18	Shift Up Indicator Light (D15 only)	IDLE #1	Output	Avail, Ground / +12V, 1.5A max
D19	Sensor Voltage 1	+5V Sensor	Output	Dedicated
D20	Sensor Voltage 2	+5V Sensor	Output	Dedicated
D21	Sensor Ground 1	Sensor Ground	Output	Dedicated, sensors only
D22	Sensor Ground 2	Sensor Ground	Output	Dedicated, sensors only

A1	A3	A5	A7	A9	A11	A13	A15	A17	A19	A21	A23	A25	B1	B3	B5	B7	B9	B11	B13	B15	C1	C3	C5	C7	C9	C11	D1	D3	D5	D7	D9	D11	D13	D15	D17	D19	D21
A2	A4	A6	A8	A10	A12	A14	A16	A18	A20	A22	A24	A26	B2	B4	B6	B8	B10	B12	B14	B16	C2	C4	C6	C8	C10	C12	D2	D4	D6	D8	D10	D12	D14	D16	D18	D20	D22

Connector A

Connector B Connector C

Connector D

30-1040 (Series 1) vs 30-6040 (Series 2) OBD1 Honda EMS pin differences:

The EMS functions assigned to certain pins have been changed and no longer match the 30-1040 EMS. Unless otherwise noted, the following pins and functions will need to be manually reconfigured after using AEMTuner to convert a V1.19 (30-1100, Series 1 EMS) calibration for use with the 30-6100 Series 2 hardware.

Pin	OBD1 Honda / Acura	30-1040 function	30-6040 function	Notes
A22	Ignition Control Module	---	CAN1L	
B4	---	Coil #5	Coil 4	Copy settings for Ign Phasing, knock feedback, cylinder ign trim
C2	---	---	CAN1H	
D4	Service Check Connector	Knock #2	Injector 9	Knock 2 not available

AEM Electronics Warranty

Advanced Engine Management Inc. warrants to the consumer that all AEM Electronics products will be free from defects in material and workmanship for a period of twelve months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM within 30 days of the date the RMA is issued.

Please note that before AEM can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RMA requested before the above process transpires.

AEM will not be responsible for electronic products that are installed incorrectly, installed in a non approved application, misused, or tampered with.

Any AEM electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of \$50.00 for inspection and diagnosis of AEM electronic parts. Parts used in the repair of AEM electronic components will be extra. AEM will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product.